

## Adaptive Drainage Slots for Acoustic Noise Attenuation, Phase II

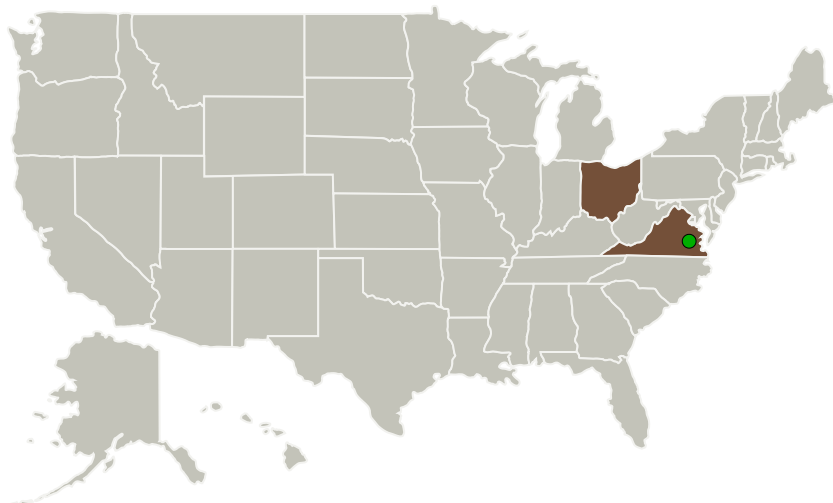
Completed Technology Project (2011 - 2013)



## Project Introduction

Cornerstone Research Group, Inc. (CRG) demonstrated feasibility in the reduction of noise attributed to drainage slots in jet engine acoustic liners. This was accomplished through the development of design rules for optimum slot design and concept development of the implementation of adaptive material technologies to control slot dimensions. CRG brought this technology to a technology readiness level (TRL) 2 after the Phase 1 effort and will bring a TRL 4 after the Phase 2 effort. The Phase 1 effort provided simulated data for the acoustic designer to start to understand and develop preliminary models on the effects of drainage slots to the liner's acoustic impedance characteristics. This data has provided justification to pursue adaptive solutions that will counteract the adverse effects of drainage slots through adaptive means. In Phase 2, CRG will refine the design, scale up fabrication, demonstrate a full-scale operationally relevant aircraft part, and analyze manufacturing costs as part of a comprehensive Technology Insertion Plan.

## Primary U.S. Work Locations and Key Partners



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Acoustic Noise Attenuation,  
Phase II

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Organizations Performing Work	Role	Type	Location
Cornerstone Research Group, Inc.	Lead Organization	Industry	Miamisburg, Ohio
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

## Primary U.S. Work Locations

Ohio	Virginia
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## Project Transitions

**June 2011:** Project Start**May 2013:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138654>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Cornerstone Research Group, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Jason Hermiller

**Co-Investigator:**

Jason Hermiller

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### Technology Maturity (TRL)

Start: 2  
Current: 4  
Estimated End: 4



### Technology Areas

#### Primary:

- TX15 Flight Vehicle Systems
  - └ TX15.1 Aerosciences
    - └ TX15.1.4 Aeroacoustics

### Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System